



TITLE:

How to use Latex<Learning Support Weeks for International Students (How to use LaTeX) >

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RIGHT:

Learning Support Weeks for International Students

How to use Latex

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学習サポートデスク

**Learning
Support
Desk**



Contents and 3W1H Latex

Contents

Introduction

Structure of Latex

Images and table on Latex

Strong function of Latex (Hyper reference)

What

Typesetting software

When

Writing reports, papers etc...

Why

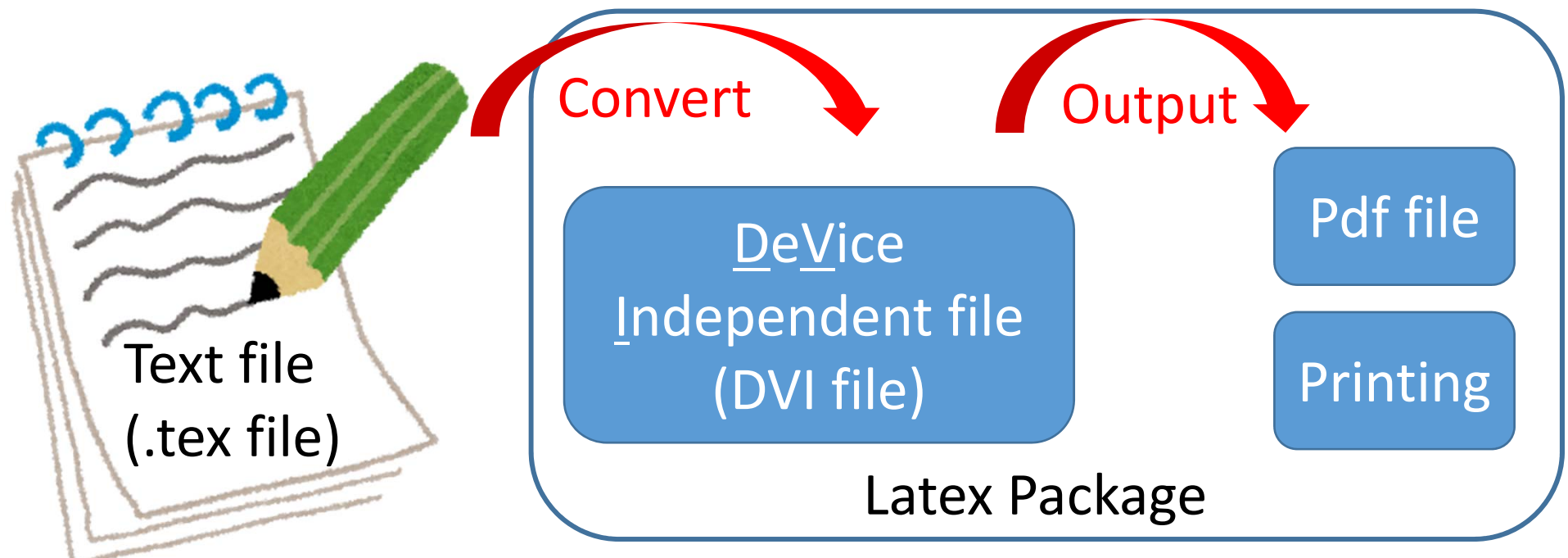
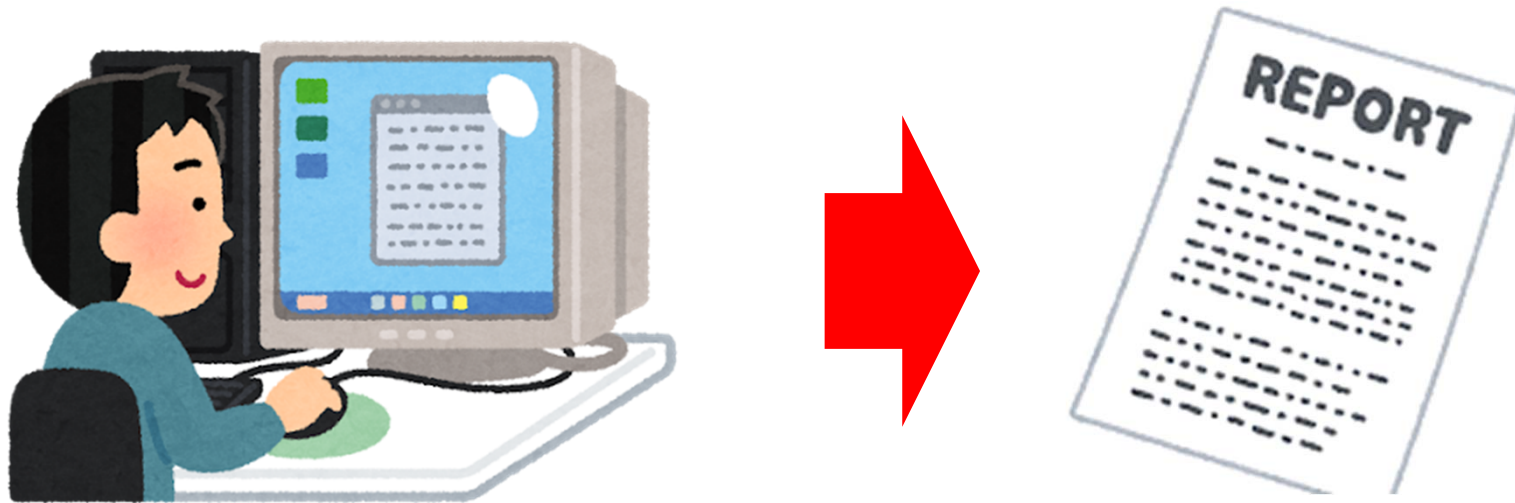
Many strong points

How

Online cloud service or offline application

What is Latex ?

Typesetting software to make beautiful documents



When is Latex used?

Suitable for document such as reports and papers.

Advantage

Make numerical formulas beautiful

Powerpoint output

$$\lim_{n \rightarrow \infty} x_n - \sum_{n=0}^{\infty} s_n = \int_0^1 g(t) dt$$

$\frac{x}{y}$

分数

e^x

上付き/下付き
文字

$\sqrt[n]{x}$

べき乗根

\int_{-x}^x

\sum^n

Click



Type

Oh my God!

Latex Output

$$\lim_{n \rightarrow \infty} x_n - \sum_{n=0}^{\infty} s_n = \int_0^1 g(t) dt$$

```
$$\lim_{n \to \infty} x_n -  
\sum_{n = 0}^{\infty} s_n =  
\int_{0}^{1} g(t) dt$$
```



Type only

Oh yeah!

Why is Latex used?

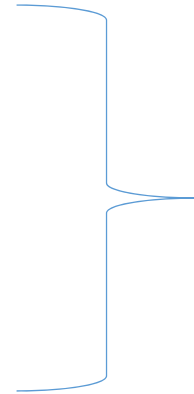
Because the format is defined and unified by Latex.



ARTICLE

ARTICLE

ARTICLE



ARTICLE

Beautiful!

Because the output of the Latex is independent of devices.



aaa.pptx



Linux

Layouts are a little different
by each computer.

How to use latex

Offline



Tex works



Advantage

Capability to expand
Userpackage (Library)

Disadvantage

Presetting is needed and tough

Online



Online cloud service **for free**

Advantage

Presetting is not needed

Disadvantage

Online storage is limited

Register for the Overleaf

Requirement : E-mail address, Password

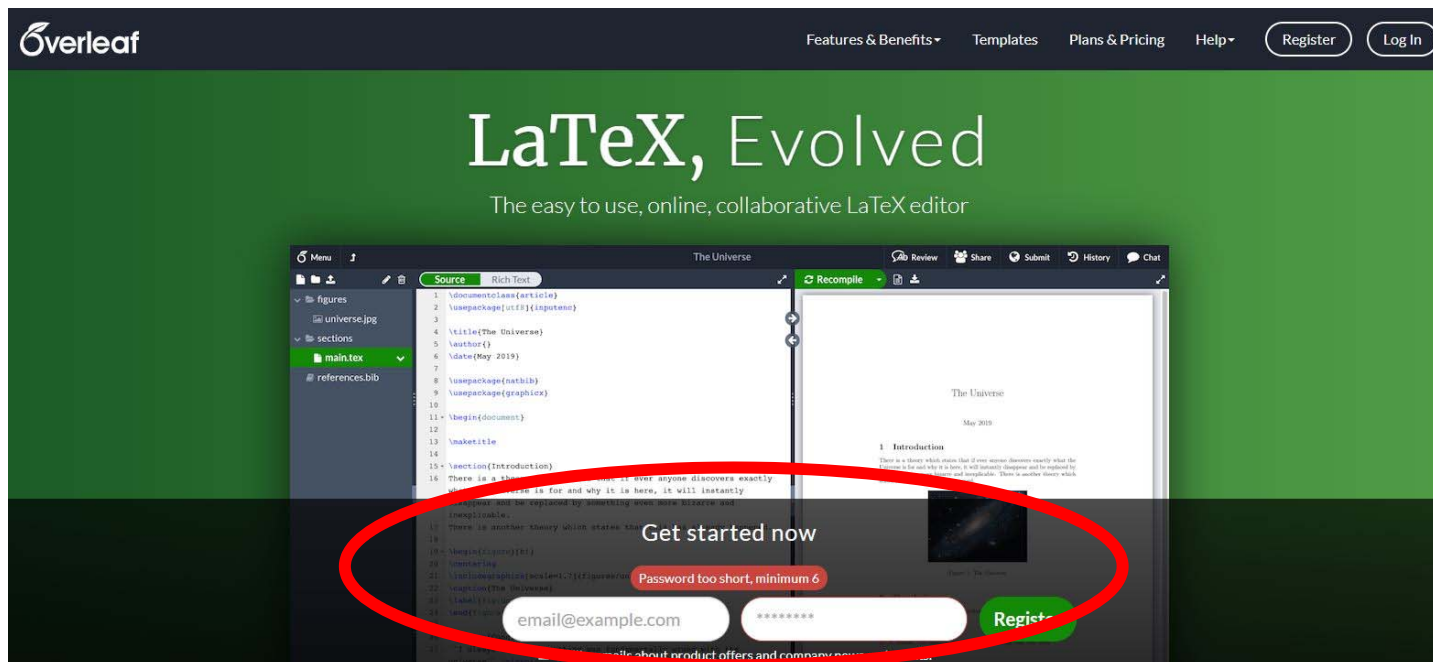
1. Search with “Overleaf”.



<https://www.overleaf.com/>

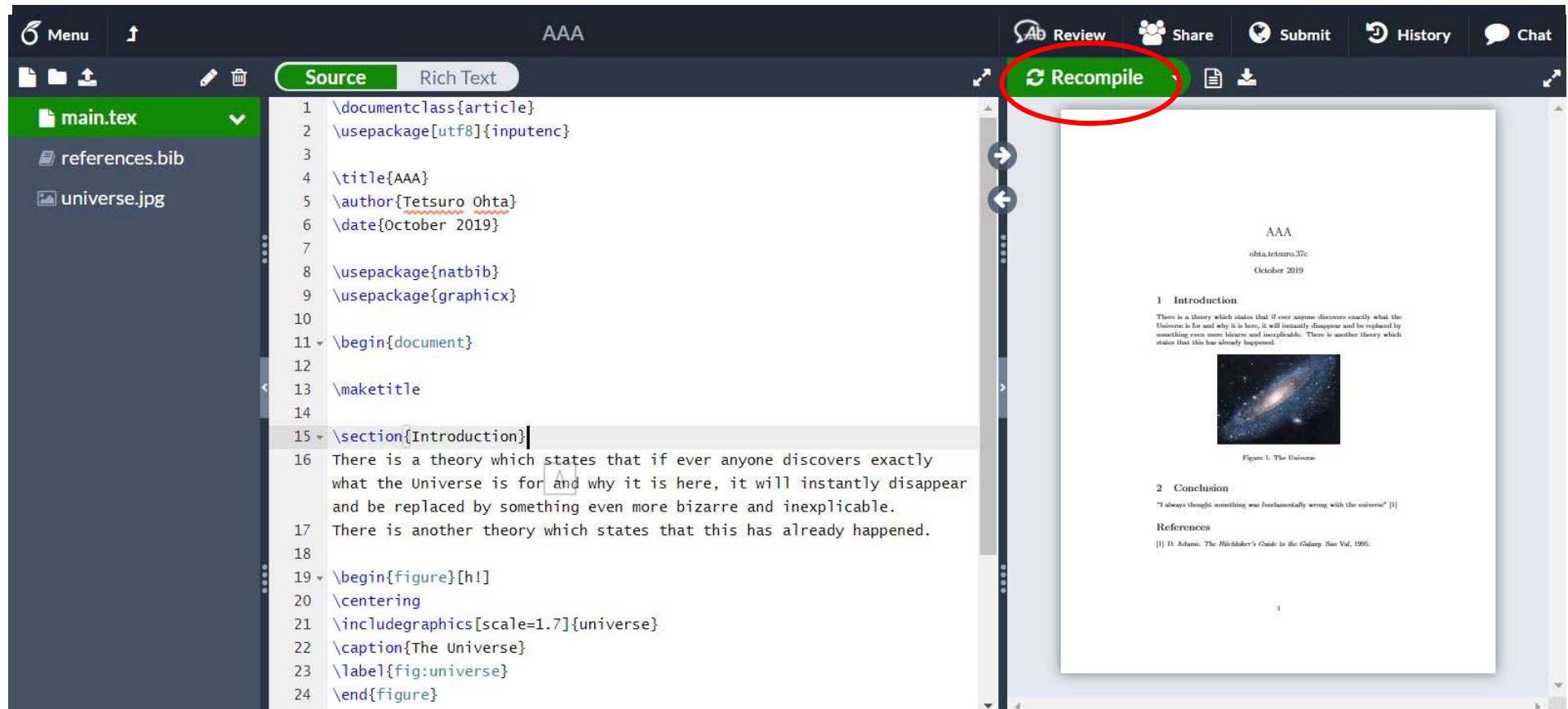
Overleaf

2. Register



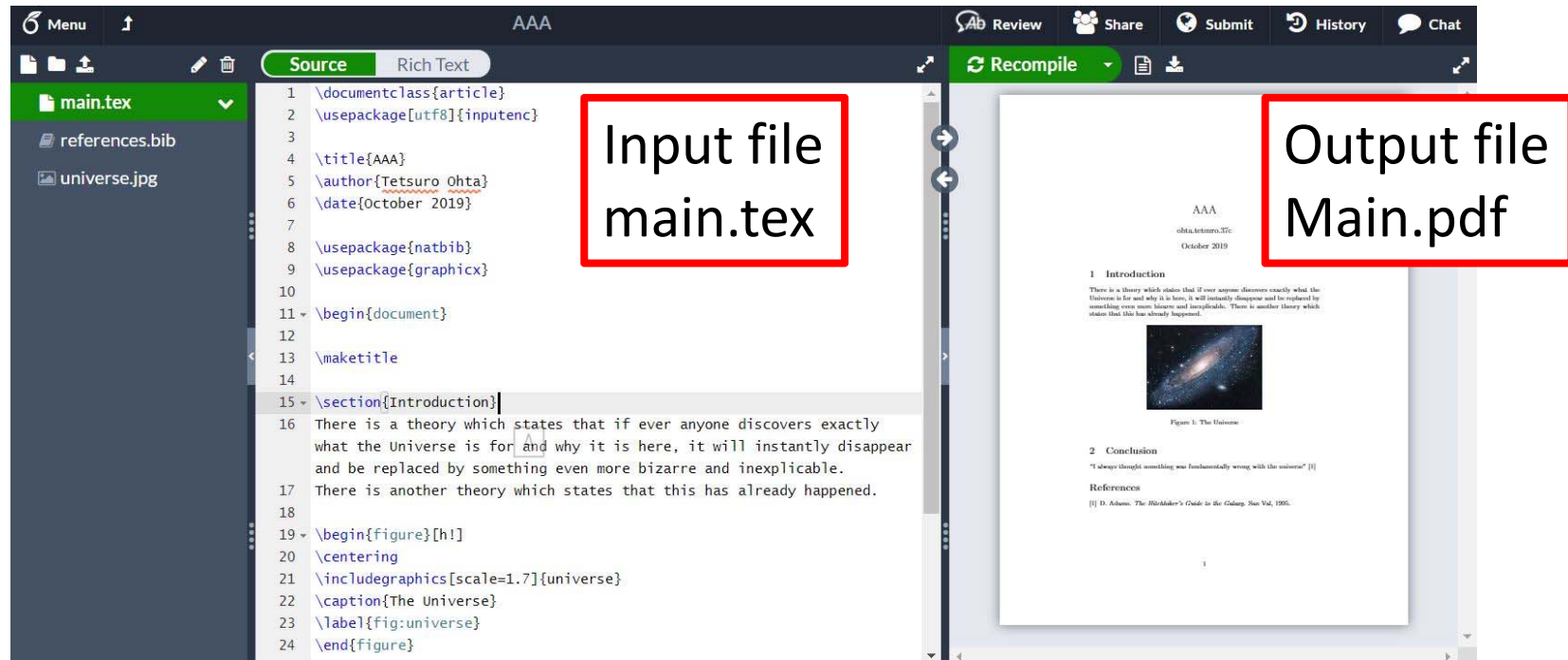
Let's start Latex

Create a sample project



Recompile means to update pdf file according to tex file.

Let's start Latex



Users edit .tex file with commands and usable characters to define the contents and format of your document.

Usable character

!	'	()	*	+	,	-	.	/	:	;	=	?	@	[]	~								
0	1	2	3	4	5	6	7	8	9																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

The commands are started with “Back”Slash (or¥)

Structure of .tex file

```
1 \documentclass{article}
2 \usepackage[utf8]{inputenc}
3
4 \title{AAA}
5 \author{Tetsuro Ohta}
6 \date{October 2019}
7
8 \usepackage{natbib}
9 \usepackage{graphicx}
10
11 \begin{document}
12
13 \maketitle
14
15 \section{Introduction}
16 There is a theory which states that if ever anyone discovers exactly ...
17
18 \begin{figure}[h!]
19 \centering
20 \includegraphics[scale=1.7]{universe}
21 \caption{The Universe}
22 \label{fig:universe}
23 \end{figure}
24
25 \section{Conclusion}
26 ``I always thought something was fundamentally wrong with
27
28 \bibliographystyle{plain}
29 \bibliography{references}
30 \end{document}
31
```

Preamble

The preamble is the part that builds a format of your document.

Body

Edit your Preamble

```
1 \documentclass{article} ①
2 \usepackage[utf8]{inputenc}
3
4 \title{AAA}
5 \author{Tetsuro Ohta} ②
6 \date{October 2019}
7
8 \usepackage{natbib} ③
9 \usepackage{graphicx}
```

① Document class

Declare your document type

Article (Section)

Report (Chapter)

Book (Chapter)

Change the font size of body
[12pt] (default 10pt)

¥documentclass[12pt]{report}

Variable within [] is defined by user

②. Overview

Define the title, author and date.

③ Userpackage

¥usepackage{} Browse the library of your Latex.
If you install libraries, you can enhance function.

Edit your Preamble

Exercise

1. Create a blank project
2. Create your preamble and compile it

Format : Report

Font size: 10pt (12pt)

To display your preamble,
¥maketitle must be written in the body.

Put images on your document

```
9 \usepackage{graphicx}
10
11 \begin{document}
12     Declaration of figure start
13 \begin{figure}[h!] ①
14 \centering
15 \includegraphics[scale=1.7]{universe} ②
16 \caption{The Universe}
17 \label{fig:universe}
18 \end{figure}
19
20 \end{document}
```

① Image position
t : top of page, b : bottom,
p : picture only, h : here,
H : absolutely here
(escape trouble on compiling)

② Select and scale
Select the image by {}
(It is more reliable
to specify the extension)
[] is scaling factor

Sometimes, an image is displayed on an unpredicted place as your document is crowded.

Latex refers to an image file in the same folder as .tex file.

Put tables on your document

Table is not required userpackage.

```
13 \begin{table}[]
14   \centering
15   \begin{tabular}{|c|c|c|}\hline ①
16     2 & 9 & 4 \\ \hline
17   ② 7 & 5 & 3 \\ \hline
18     6 & 1 & 8 \\ \hline
19   \end{tabular}
20   \caption{Magic circle}
21   \label{Magic}
22 \end{table}
```

① Declaration of figure
c : center, r : right, l : left
| : ruled line,
to define matrix dimension
The number of separation is
a dimension of columns

② Double back slash

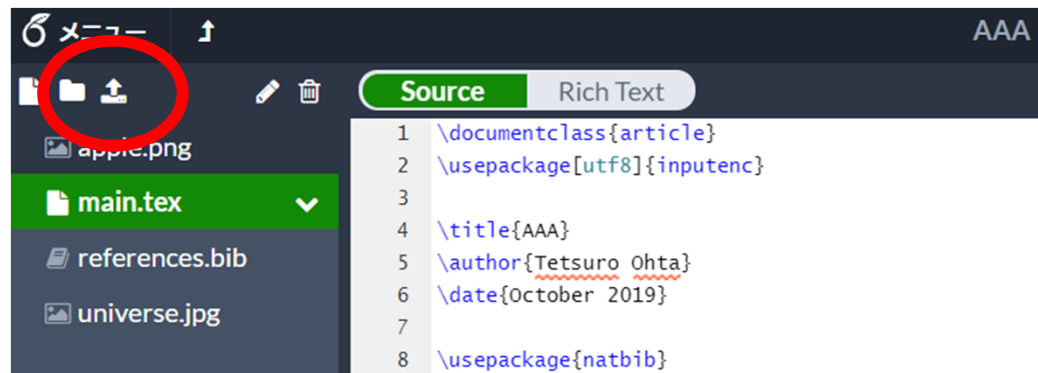
The number of double back slash is a dimension of rows.

& is partition of element of matrix.

Put picture and table on your document

Exercise

1. Download free picture from website.
2. Upload picture on your overleaf project.



3. Create a table with 3 rows and 2 columns.
4. Change ruled lines to double ruled lines.

| → | |

5. Compile picture and table

Link between citation and reference

Hyper reference bookmark is strong function of Pdf output.

```
1 \documentclass{article}
2 \usepackage[utf8]{inputenc}
3 \usepackage[dvipdfmx,bookmarks=true,bookmarksnumbered=true,bookmarkstype=toc]{hyp①
  erref}
4 \title{AAA}
5 \author{Tetsuro Ohta}
6 \date{October 2019}
7
8 \begin{document}
9 J. A. Stockdale et.al(1975)\cite{Stockdale} ②
10 \newpage
11 \begin{thebibliography}{99} ③
12 \bibitem{Stockdale}J. \ A. \ Stockdale, \ V. \ E. \ Anderson, \ A. \ E. \ Carter \
   and \ L. \ Deleanu, \textit{J. \ Chem. \ Phys.}\textbf{63}, \ 3886 (1975)
13 \end{thebibliography}
14 \end{document}
```

①Hyper reference userpackage
[] variables are options of bookmarks.

②Flag of citation
Bookmark is inserted there.

③Reference information
Bibitem is hyper ref destination. Variable is same as flag one.
{99} means maximum ref. number.

Try hyper reference

Exercise

1. Write a sentence including citation command.
2. Write a newpage command on next line of the citation.
3. Write a bibliography including the same label bibitem.
4. Compile your .tex file.
5. Click your citation of your pdf file.

Reference



Autor : 奥村 晴彦 黒木裕介

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